

## CLAIMS

5                    1. An RF amplifier control circuit, comprising:  
                     an amplifier;  
                     a vector modulator having an output coupled to an input of the  
amplifier;

                     means for applying an initial control signal to a control input of the  
amplifier, the initial control signal an estimate of a signal level required at the  
10                control input of the amplifier to provide a particular output when the vector  
modulator output is at full output;

                     an integral control circuit having a control signal output coupled to  
the control input of the amplifier, the integral control circuit having a reference  
input coupled to a second reference signal source,

15                an output of the amplifier coupled to an input of the integral control  
circuit.

20                2. The circuit of Claim 1, a signal delay means disposed between the  
second reference signal source and the reference input of the integral control  
circuit.

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3. The circuit of Claim 1, a non-linear device interconnecting the output of the amplifier to the input of the integral control circuit.

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4. The circuit of Claim 1,  
means for ramping the output of the vector modulator coupled to the input of the amplifier upon expiration of a first delay period after applying the initial control signal to the control input of the amplifier;

10 the integral control circuit for correcting the initial control signal applied to the amplifier during ramping by integrating the output of the amplifier relative to the second reference signal,

15 the second reference signal proportional to the ramping vector modulator output.

20 5. The circuit of Claim 1, means for phase matching the second reference signal and the amplifier output applied to the integral control circuit during ramping.

25 6. The circuit of Claim 4, means for controlling a transient out-of-band power spectrum during ramping.

7. The circuit of Claim 4, means for applying a third reference signal to the integral control circuit after ramping, the third reference signal proportional to an average output of the amplifier.

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8. The circuit of Claim 7, means for preventing the integral control circuit from tracking out the modulation envelope while applying the third reference signal to the integral control circuit.

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9. A radio communications device, comprising:

a transmitter having a vector modulator with an output coupled to an input of an amplifier;

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means for applying an initial control signal to a control input of the amplifier before the vector modulator is at full output, the initial control signal an estimated signal level required at the control input of the amplifier to provide a particular output when the vector modulator output is at full output;

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means for ramping the output of the vector modulator after applying the initial control signal to the amplifier;

means for correcting the initial control signal applied to the control input of the amplifier during ramping;

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means for controlling a transient out-of-band power spectrum during ramping.

10. The radio communications device of Claim 10, the means for applying the initial control signal includes an accumulator having a register output coupled to the control input of the amplifier.

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11. The radio communications device of Claim 10, the means for correcting includes an integral control circuit having a control signal output coupled to the control input of the amplifier, the integral control circuit having a reference input coupled to a second reference signal source.

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12. The radio communications device of Claim 11, the second reference signal source for applying a second reference signal proportional to the ramping vector modulator output to the reference input of the integral control circuit, means for phase matching the second reference signal and the output from the amplifier applied to the integral control circuit.

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13. The radio communications device of Claim 12, means for maintaining a corrected control signal applied to the amplifier.

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14. The radio communications device of Claim 13, the means for maintaining includes means for applying a third reference signal to the integral control circuit after ramping, the third reference signal proportional to an average  
5 output of the amplifier, and means for configuring the integral control circuit to have a second bandwidth after ramping, the second bandwidth less than the first bandwidth.

10 15. A method for a controlling an amplifier in a transmitter, comprising:

applying an initial control signal to the amplifier before a vector modulator signal coupled to an input of the amplifier is at full output;

15 ramping the vector modulator output coupled to the input of the amplifier after applying the initial control signal;

correcting the initial control signal applied to the amplifier during ramping by integrating an output of the amplifier relative to a second reference signal with an integral control circuit coupled to the control input of the amplifier,

20 the second reference signal proportional to the ramping vector modulator output.

16. The method of Claim 15,

applying the initial control signal to the amplifier by applying a first reference signal to an accumulator having an output coupled to a control input of the amplifier;

5               ramping the vector modulator output coupled to the input of the amplifier upon expiration of a first delay period after applying the first reference signal to the accumulator.

10               17. The method Claim 15, controlling a transient out-of-band power spectrum during ramping with a first bandwidth of the integral control circuit.

15               18. The method of Claim 15, maintaining a corrected control signal applied to the amplifier by applying a third reference signal to the integral control circuit after ramping, the third reference signal proportional to an average output of the amplifier.

20               19. The method of Claim 18, configuring the integral control circuit with a second bandwidth after ramping, the second bandwidth less than the first  
25               bandwidth.

20. The method of Claim 15, coupling the output of the amplifier to the input of the integral control circuit with a non-linear device.

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21. The method of Claim 15, phase matching the second reference signal and the amplifier output applied to the integral control circuit.

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22. The method of Claim 21, phase matching the second reference signal and the amplifier output by delaying the second reference signal applied to the integral control circuit.

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23. The method of Claim 15, generating a new first reference signal by sampling and storing an output of the integral control circuit after ramping.

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24. The method of Claim 16, obtaining the first reference signal from a look-up table for a particular power output of the amplifier.